PROCEEDINGS OF THE

ROYAL ENTOMOLOGICAL SOCIETY

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GENERAL MEETING

WEDNESDAY, 20TH JUNE, 1945, **at 4.30 p.m.**

AGENDA

1. Confirmation of the Proceedings of the General Meeting held on 6th June, 1945.
2. Recommendations of candidates for Fellowship.
3. Announcement of election of new Fellows.
4. Additions to the Library since the meeting on 6th June, 1945 :

Presented.

Riley, N. D. : *Some British Moths.* [The author.]

Purchased.

Panneel, H. : *Le collectionneur d'insectes.* Paris, 1944.

Séguy, E. : *Insectes ectoparasites.* Faune de France, **43**, 1944.

Le Cerf, F. : *Atlas des Lépidoptères de France. Rhopalocères.* 1944.

Portevin, G. : *Ce qu'il faut savoir des Insectes.* **1**, Papillons, 1938; **2**, Coléoptères et Hémiptères, 1939; **3**, Orthoptères, Hymenoptères, Diptères et insectes inférieurs, 1942.

Chauvin, R. : *Ce qu'il faut savoir sur la vie des insectes. Physiologie et Biologie.* 1943.

5. Admission of Fellows.

6. JOINT MEETING WITH THE ROYAL METEOROLOGICAL SOCIETY.

Insects and Weather.

[Abstract.]

Major H. C. GUNTON, M.B.E., F.R.E.S., F.R.Met.S. (a Vice-President of the R.Met.S.) :—Phenology is a natural meeting ground for meteorologists and entomologists. When the Phenological Report was re-organised in 1937 a list of 50 indigenous and 3 immigrant Lepidoptera was included and the observers include several Fellows of the R.ent.S. Reference will be made to (i) the methods of comparing the meteorological factors with the responses of plants, and of insects with different life histories, (ii) a summary of the results obtained and (iii) practical applications. It will be suggested that the time is ripe for a broadening of the basis of the management and publication

of the Report by closer collaboration between the R.Met.S. and other Societies interested.

Dr. C. B. Williams, M.A., Sc.D., F.R.E.S. :—Changes in numbers of insect populations, which are of great interest both scientifically and from an economic point of view, are largely determined by weather conditions acting either directly on the insect, or indirectly through its effects on parasites or the food plants. For many years work has been carried out at Rothamsted Experimental Station on the effect of weather conditions on insect numbers, using particularly a light-trap as a method of measuring the numbers of insects active under different weather conditions. Under the conditions of climate and weather in this area it was found that changes of temperature were the most important factors in determining insect activity, but rain, wind, humidity, night-cloud and barometric pressure all had smaller but measurable effects. It was also found possible to measure the relation between the general abundance of insects in any one month and the weather conditions of the previous three months. In this case temperature was the most important factor under winter conditions, but rainfall was more important in the summer. A formula was devised from which it was possible to forecast the change in numbers of insects from the normal in any one month, and application of this over a period of 48 months showed very promising results. Up to the present it has only been possible to apply the results to all insects considered together. Extension of the work to single species has been held up for many years owing to the impossibility of using light traps during the war.

Dr. A. E. Slater, M.R.C.S., L.R.C.P., F.R.Met.S. :—Vertical air currents are agents of insect dispersal. Insects at greater than their normal habitat are carried up either by winds deflected over mountains or by convection currents. Evidence afforded by systematic collection, in traps attached to aeroplanes, of weak fliers and flightless forms. Glider pilots, in conjunction with meteorologists, have made intensive studies of convection currents, especially as regards origin and ascent from ground. Description will be given of the information obtained, including characteristics associated with local features and with different times of the day.

Dr. B. P. Uvarov, D.Sc., C.M.G., F.R.E.S. :—The organisation of bio-climatic research. A discussion on the relation of entomology to meteorology may be conducted along several different lines. In the first instance, one might concentrate on the evidence of the importance of weather and climate in insect life. An attempt to survey the literature on the subject some fifteen years ago (1931, *Trans. ent. Soc. Lond.* **79** : 1–247) resulted in a bibliography of over one thousand titles. Since then, a steady and ever-increasing flow of data has continued, and that survey is now completely out-of-date. Another approach would be to consider the best ways and methods of investigating relations between insects and weather. The problem is an extremely complex one, and it is already being attacked from many different angles. Some entomologists believe that its solution lies in fundamental research on the physiological effects of separate weather factors and of their combinations; others rely on experimental results under controlled conditions; still others attempt boldly to bridge the gap between insect and weather by studying statistical correlations between meteorological records and events in insect life; finally, ecologists strive to study the actual climatic environment of an insect in the field. All these approaches contribute, in their own way, towards a solution of the problem and it would be scarcely profitable to discuss their

relative merits, since a uniform conclusion cannot be reached and even appears undesirable. It should then be possible to agree on three points : (1) that the need for investigating the rôle of weather in insect life is felt by all entomologists; (2) that various approaches should be used in these investigations; and (3) that a close collaboration between entomologists and meteorologists is an essential condition for success. If these three simple points are accepted, it would appear that the main problem to be discussed is :—what should and can be done in order to bring about the most fruitful collaboration between the two sciences? The question is not a new one, since it was raised in 1929 at the Conference of Empire Meteorologists in London. At that Conference, several entomologists exerted themselves in trying to prove to meteorologists that they should help in solving entomological problems. The result was somewhat embarrassing to the entomologists, since the meteorologists not only proved most willing in principle to co-operate, but immediately asked how they could help, and what observational data on weather would be required for entomological purposes. There was no satisfactory reply from the entomologists, because, at that time, exact knowledge on the value of the separate weather factors on insects was very scarce. Since then, considerable progress has been made, mainly as a result of bioclimatic studies on several economic insects (tsetse, locusts, wireworms, codling moth, etc.) but entomologists are still far from being able to formulate their requirements for standard meteorological data. There are valid reasons for this backwardness. On the one hand, most entomologists have only a superficial knowledge of meteorology, and few realise the immense complexity of its problems, or understand thoroughly its methods. It is a sad fact that much bioclimatic work on insects consists of painstaking studies of the insect, conducted against a background of semi-amateurish excursions into meteorology. The remedy is clear; proper training in principles and methods of meteorology and climatology should form an essential part in the education of an entomologist, at least of an economic entomologist. However, this would only improve the meteorological standard of investigations on particular insects. There will remain a vast field which can be profitably explored only by joint action. To give a few examples, only an approach equally scientific both on the entomological and the meteorological side can promise a solution of such problems as the correlation of microclimates with standard weather data; forecasting of seasonal events in insect life and their mass outbreaks; geographical limits of insect distribution; insect migrations, etc. The question, therefore, is one of organising bioclimatic research jointly by entomologists and meteorologists. The need for such research has already been expressed in a resolution passed by the Conference of Empire Meteorologists sixteen years ago, but no action was taken, because there existed no single public, or official, body interested in both branches of science. It would appear that the present joint meeting of the two learned societies is fully competent to consider what practical steps might be taken for ensuring that facilities for bioclimatic research on insects may be available both in this country and overseas.

7. It will not be possible at this Meeting to accept exhibits unconnected with the discussion.

Tea will be served in the Library **at 4 p.m., before the meeting.**

The next General Meeting will be held on Wednesday, 3rd October, 1945.

PROCEEDINGS OF THE GENERAL MEETING HELD ON 6TH JUNE, 1945.

Professor G. D. Hale CARPENTER, M.B.E., D.M., in the Chair.

Present, 50 Fellows and 7 Visitors.

The minutes of the General Meeting held on 6th June, 1945, previously circulated, were confirmed, and signed by the Chairman.

The names of the following candidates for election were read :—

For the first time : Colin J. Galbraith, Arthur Macdonell Morley, P. H. Abbott.

For the second time : A. P. Kapur, Gordon Macgregor Crawford, Geoffrey Withington Harper, Vera Molesworth Muspratt, Robert Burnett, Theodore David Goddard, Alfred Frederick Ernest Friedlein.

The Secretary read the names of the following newly elected Fellows of the Society : Douglas Patrick Pielou, Ph.D., Entomology Dept., London School of Hygiene and Tropical Medicine; John Eric Marson (S/Sgt.), 6 (East African) Infantry Brigade W/Shops, E.A.E.M.E., South-East Asia Command; Peter William Stanley, "Trigintha," Watford Road, King's Langley, Herts; Clarence Victor Wilton Burnard, Kitcombe Farm, Farringdon, nr. Alton, Hants; William McAuley Gracie, M.B.E., Ministry of Food, Gower Street, W.1.

Thanks were voted to the donors of gifts to the Library since the last meeting, and also to Mr. Hugh Main for the following works presented at the meeting :

Fabre, J. H. : *Souvenirs entomologiques.* Séries 1–10. Edition définitive illustrée. 8vo. Paris, 1920–1924.

Legros, G. V. : *La vie de J. H. Fabre suivie du répertoire général analytique des souvenirs entomologiques.* 8vo. Paris, 1924.

Messrs. H. H. Patrick, H. D. Bessemer, L. S. Whicher and Captain E. S. Brown signed the Obligation Book and were admitted as Fellows.

Professor G. D. Hale Carpenter and Dr. A. G. Hamilton made communications, abstracts of which were printed on pp. 15 and 16 of this journal.

In addition Dr. J. R. Busvine exhibited the Braconid *Meteorus atrator* Curtis captured in London among clothing heavily infested with *Tineola bisselliella.* He mentioned that most species of *Meteorus* attack phytophagous lepidopterous larvae and pupate in a cocoon hanging on a thread. *M. atrator* had been reported from clothes moths recently in Switzerland, but it had only once been recorded with *Tineola* in Great Britain (Lyle, 1914). The specimens were all females.

Professor Hale Carpenter reported, in connection with his note on " anting " in birds (see 1945, *Proc. R. ent. Soc. Lond.* (C) **10 : 13**), that an instance of this behaviour had recently been observed by him in his garden at Oxford. At 6.30 a.m. on about May 20th a hen blackbird was seen pecking at the ground and applying her bill subsequently beneath her tail feather and to the wing bases. Large numbers of an ant, *Lasius niger*, were found on the ground where she had been standing.

N. D. RILEY, *Hon. Secretary.*